

WHAT IS CLAIMED IS:

1. A method of forming a lamp comprising:
providing a reflective interior surface comprising:
providing a layer of a reflective material, and
providing a protective layer which protects the silver layer
against oxidation and sulfide formation; and
forming the lamp from the interior surface and a light source, the thickness of
the layer being selected such that at least one of the following is satisfied:
 - (a) a color correction temperature of the lamp is no less than 40K
below a color correction temperature of the light source, and
 - (b) a % reflectance of the reflective interior surface is no less than
about 3% below that of an equivalent reflective interior surface
without the protective layer in a visible spectral range of 400-800
nm.
2. The method of claim 1, wherein both (a) and (b) are satisfied.
3. The method of claim 1, wherein the color correction temperature is no
less than about 20K below that of the light source.
4. The method of claim 3, wherein the color correction temperature of
the lamp is greater than the color correction temperature of the light source.
5. The method of claim 3, wherein the % reflectance of the reflective
interior surface is at least 94.5% layer in the visible spectral range of 400-800 nm.
6. The method of claim 1, wherein the % reflectance of the reflective
interior surface is no less than about 2.5% below that of the layer of a reflective
material in the visible spectral range of 400-800 nm.

7. The method of claim 6, wherein the layer of a reflective material has an average % reflectance of at least 90% in the visible range of the spectrum.

8. The method of claim 1, wherein the reflective material comprises silver.

9. The method of claim 1, wherein the protective layer comprises at least one of the group consisting of:

oxides, suboxides, carbonated compounds and hydrogenated compounds of one or more of silicon, titanium, tantalum, zirconium, hafnium, niobium, aluminum, scandium, antimony, indium, and yttrium;

fluorides of one or more of magnesium, sodium, aluminum, yttrium, calcium, hafnium, lanthanum, ytterbium, and neodymium;

nitrides of one or more of silicon, aluminum, chromium, and titanium; and zinc sulfide.

10. The method of claim 9, wherein the protective layer includes at least one of an oxide of tantalum and an oxide of silicon.

11. The method of claim 10, wherein the protective layer comprises silica and has a thickness in one of the following ranges:

50-200 Å;

850-1400 Å; and

2600-3250 Å.

12. The method of claim 1, wherein the protective layer has an optical thickness t_{OPT} which satisfies the relationship:

$$1.1(1 + 0.9n) \leq t_{\text{OPT}} \leq 1.4(1 + 0.9n)$$

where n is an integer from 0 to 5.

13. The method of claim 1, wherein the method further includes a tubulation step, the step of providing a reflective layer including:

forming the reflective layer after the tubulation step.

14. The method of claim 1, wherein providing the protective layer includes depositing the layer by chemical vapor deposition on a housing.

15. A lamp comprising:

a housing;

a light source disposed within the housing;

a reflective coating on an interior surface of the housing, the reflective interior surface comprising:

a layer of silver, and

a protective layer disposed over the layer of silver, the protective layer having an optical thickness t_{OPT} which satisfies the relationship:

$$1.1(1 + 0.9n) \leq t_{\text{OPT}} \leq 1.4(1 + 0.9n)$$

where n is an integer from 0 to 10.

16. The lamp of claim 13, wherein the protective layer is selected from the group consisting of silicon dioxide, titanium dioxide, aluminum oxide, tantalum oxide, and combinations thereof.

17. The lamp of claim 13, wherein the housing is sealed with a lens.

18. The lamp of claim 13, wherein the light source is selected from the group consisting of incandescent light sources, ceramic metal halide light sources, light emitting diodes, laser diodes, quartz metal halide light sources, and combinations and multiples thereof.

19. The lamp of claim 18, wherein the light source is a halogen tungsten lamp.

20. A method of forming a lamp comprising:

providing a reflective surface which includes silver;

covering the reflective surface with a protective layer which is light transmissive, the protective layer exhibiting an oscillating function when one of color correction temperature and percent reflectance is plotted against optical thickness for a lamp formed from the reflective surface and protective layer, the optical thickness of the protective layer being selected such that the following relationships are satisfied:

the color correction temperature is no less than about 20K below that corresponding to a protective layer optical thickness of zero; and

the reflectance is no less than 3% below that corresponding to an optical thickness of zero in the visible range of the spectrum.

21. A method of forming a lamp comprising:

providing a reflective interior surface;

determining a relationship of at least one of color correction temperature and reflectance as a function of optical thickness for a selected protective material to be used for forming a protective layer;

using the relationship, determining an optical thickness at which at least one of the following relationships is satisfied:

the color correction temperature is no less than about 20K below that corresponding to a protective layer optical thickness of zero; and

the reflectance is no less than 3% below that corresponding to an optical thickness of zero in the visible range of the spectrum;

covering the reflective surface with a protective layer formed from the protective material which is light transmissive, the protective layer having an optical thickness which satisfies the at least one relationship.

22. The method of claim 21, wherein the relationship is determined theoretically.